



NITE-TIMES

NEWS

Chicago Area Timex Users Group

Volume 3, Number 4

Downers Grove, Illinois

July/August 1989

MEMORY MAP

ROUTINES

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C.A.T.U.G. CLUB OFFICERS

Here is the list of 1989 club officers and how to contact them. The club has two strong SIGS, SPECTRUM/TS2068 and QL. If you have questions about either of these fine machines or even the ZX81/TS1000/TS1500 call one of the officers for direction.

POSITION	NAME	PHONE	PRIMARY FUNCTION
President	Butch Weinberg	373-2470	The buck stops here...
Vice-President	Gary Lessenberry	473-9415	Meeting Planning, etc.
Secretary	John Donaldson	837-7957	Records and Reporting
Treasurer	Al Feng	971-0495	Dues and Purchasing

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NITE-TIMES NEWS

Volume III, Number 4

1

July/August 1989

NITE-TIMES Information

The Nite-Times News is the newsletter of the Chicago Area Timex Users Group. For an annual fee of \$10.00 you can become a CATUG member with full membership privileges. Send your dues to :

CATUG Treasure Al Feng
15 Wake Robin Ct.
Woodridge, IL 60517

The Chicago Area Timex Users Group is pleased to exchange newsletters with other Timex and Sinclair supporting users groups. If you desire to reprint any articles that appear here, please provide credit to the author and this newsletter. If you have any suggestions or would like to submit an article, please contact:

NITE-TIMES NEWS EDITOR
Bob Swoger
613 Parkside Circle
Streamwood, IL 60107

It is preferred that you call:
H312/837-7957 or W312/576-8068

NITE-TIMES CONTRIBUTIONS

If you would like to contribute an ARTICLE to the newsletter put a file in your CATUG PDP 11/60 account called NITETIMES.ART If you have special buy information place a file in your account named COMPUTER.BUY If you have a WANT AD for the newsletter put a file in your account called COMPUTER.ADS If you have information on a Special Interest Group place a file in your account called SIG.NWS

These files will be gathered by the BBS and downloaded to the editor. If you don't have a CATUG account either get one or contact the editor by mail, phone, or in person.

CONTRIBUTORS TO THIS ISSUE

Butch Weinberg
John Donaldson
Al Feng
Dave Lebowitz
Robert B. Rose, K6GKU
Bob Swoger, K9WVY
Len Zielinski

CLUB MEETINGS

The Chicago Area Timex Users Group meets on the second Saturday of each month at the home of Steve Cooper in Downers Grove, Illinois from 1:00 to 5:00 PM.

Steve's home is located at 1300 Maple Street in Downers Grove just 2 blocks southwest of the Downers Grove Public Library.

The CATUG coordinator for our meetings is Steve Cooper and he can be contacted during the evening at 312/968-3553.

DATA INTERRUPT

We have finally received our copies of Quantum Levels which now includes SyncWare News! Better late than never and it still looks great! Rumor has it that this is to be the next to last issue though and that is bad news if it is true about this fine publication. There is a request in side for more articles, though, so we will have to wait and see. Al and Bob did make immortality, however, so congratulations, guys.

**PLEASE SEND ALL
FUTURE
NEWSLETTERS
TO OUR NEW
LIBRARIAN
AT THE ADDRESS
GIVEN BELOW:**

It is:

CATUG - C/O Bob Swoger
613 Parkside Circle
Streamwood, IL 60107

Thank you!

FROM THE PRESIDENTS DESK

I thought you would all enjoy an article by Len Zielinski from CoCo 123, the newsletter of the Glenside Color Computer Club of Illinois. Len is retired from work but not retired from computing and is a friend of Bob Swoger. Len gives us all some insight he has gained into the further use of his computer. Bob has attended the Glenside Color Computer Club of Illinois and they are still kind to him even though he is an avid T/S 2068 user.

With the coming of the CoCo 3 the group now has a machine that has under the hood almost as much as the T/S 2068 and lacks only the BASIC. To make up for this they like to run the OS-9 operating system which allows for multi-tasking like we QL users have.

These CoCo 3's have had good keyboards unlike the QL's and also sport composite video and TTL outputs like the T/S 2068.

Maybe Tandy was trying to get it all together? The T/S 2068 and the CoCo 3 are just close enough in operation to allow owners of the two machines to

get along together, says Bob Swoger.

Any way, now, here is Len's article:

COMPUTER GRAPHICS
by
Len Zielinski

Reading the article on Computer Graphics in the June issue of National Geographic gave me a new insight into the world of graphics, not as we in the CoCo community know and use it, but as it is used in the world of science, Art and Medicine. Excerpted from the article, here are some of the areas in which impossible visions are made possible.

SIMULATION - Providing safe tests for human-machine interaction; available tool for defense and other industries. F-16 fighter pilots are trained with computer simulations that can fly the trainee to any point on earth. Any weather condition can be selected along with any dogfight simulation, bombing mission, or missile launching.

CAD/CAM - In computer - aided design and manufacturing, they afford unlimited freedom to explore alternatives. This technique accounts for more than half of all the money spent on computer graphics. Architects can view their creation from any perspective, in any light. A few keystrokes will reveal the structures internal supports, glowing through transparent walls. Time is then freed for the creative side of design by minimizing tedious, routine work.

MEDICINE - Doctors use digitized image processing for a 3-D view inside the body for safer surgery. A

computer-generated image of a patient's head is synthesized from a sequence of two dimensional magnetic resonance images. Before even picking up a scalpel, a surgeon can rotate and view the 3-D image from any perspective. The size and location of brain tumors can be more easily located.

SCIENTIFIC VISUALIZATION - Complex mathematical equations translate into images that reveal new meaning to scientists. Reduced to visual imagery, vast amounts of abstract data can be conveyed in concise and dramatic form.

ANIMATION - Widely used in the television and movie industry for creating special effects and designs. As in the flying logos that introduce TV movies. The breathtaking animations in the film Star Trek II were all computer generated.

ART - Graphics artists are discovering new links between geometry and nature, and create beauty through mathematics. With as many as 16 million colors in his electronic palette, an artist might re-color a composition in seconds. While changing its perspective and lighting with the touch of a key.

This is NOW; who knows where the future is taking us? At Los Alamos National Laboratory, where the atom bomb was created, now provides facilities for computer research. Scientists there can use the newest Cray "super-computers" to help unlock the mysteries of the fundamental laws of nature.

The article quotes a Japanese professor at the University of Tokyo: "We are in the middle ages in computer graphics and computers in general. We'll

never catch up." According to a young American who started a software firm in Japan their culture itself is a barrier. No Japanese wants to stand out as an individual; in order to be a good programmer it is necessary to be a free-thinker and stand out. Yet lets not get complacent; if Japan ever targets computer graphics as a national priority they could be a power in short order. Right now, they seem content to make Walkmans, TV's, and cars.

THREE CHEERS FOR THE RED, WHITE, AND BLUE, and our free-thinking, free-spirited computer geniuses!

Sound applications, color graphics, Desk-Top publishing, CAD/CAM, medicine, scientific visualization, animation, art, communication, sounds to me like we have forgotten all the things we can do with our machines. Please share your interests with your fellow user group members.

We will continue to emphasize club activity based on keeping the interest in the T/S2068 and QL alive by providing exposure to current software and hardware used by you, our club members. Your suggestions and participation are needed and welcome.

We now have a 24 hour BBS and encourage you to exchange mail and contribute to the Download Section. Use it and have fun!

* C A T U G B B S *
* 312/576-7072 *
* Type at the > prompt: *
* LOG SINCLAIR/GUEST *
* BYE to log out *

Butch Weinberg, President
Chicago Area Timex Users Group.

TREASURY NOTES

After our last mailing expense of \$11.50 and the addition of dues from a new member our balance stands at \$222.32. Our current paid membership stands at 25.

Al Feng, Treasurer
Chicago Area Timex Users Group

SECRETARY'S NOTEPAD

July 8, 1989

Bob Swoger brought the freshly printed NITE-TIMES newsletters and copies of newsletters from other clubs for the members present to take home for their libraries.

The meeting was called to order at 2PM with 10 members in attendance. A call for more newsletter articles went out with special emphasis on hardware and software articles rather than reviews.

With the drying up of TIMEX/SINCLAIR magazines and hardware/software dealers, we will need the talents of each other to survive. Also, software writers and hardware developers have had to wait for over a year for their articles and ads to get to print. As a result they are getting fed up and holding back new articles to the magazines. This complicates the magazine situation even more. (Such is the case with Bob Swoger's operating system for the LarKen DOS). The dwindling article back-log causes the publishers to think that interest is dying but they have caused the situation themselves!

One way to see our work get to print quickly is to contribute it to the newsletters and exchange newsletters. This shall be the intent of the

CATUG from this moment onward.

We are aware that few of us know what all is available for our machines but each of us has knowledge of some of the pieces. In this light it was decided that a topical study would be given at each meeting in the future with one person heading up a meeting on a particular topic so that we all might become familiar with all the hardware and software available to us.

Up-coming meetings will be on:
GRAPHIC programs
DATA BASES
HARDWARE DEMOS
MIDI for the T/S 2068

Watch the CATUG BBS for further information.

After the meeting Nazir brought in various hardware items used with the SPECTRUM version computers. He had a universal joystick interface, a light pen with spectrum software for both the T/S 2068 and Spectrum, and both 256K and 512K RAM expansion cards for the QL.

He also had a T/S 1000 16K RAM Pack modified for use with the T/S 2068. This looked fascinating. We plugged it into the T/S 2068 and Bob Swoger typed in a program to show it off to all present. Nazir had mapped it into banks 5 and 6. Bob stored a screen into bank 5 of home RAM and another screen into bank 5 of the external 16K RAM pack. The screen then switched pictures as the program switched between RAM pages. This looks like the beginning of something great to do with old RAM packs!

August 10, 1989

When Bob Swoger walked in the door Butch Weinburg and Al Feng were sitting in front of Steve

Coopers QL and it was loaded with CHESS. Bob said that this was the opportunity he had been waiting some time for and so he hooked up his LarKen system to Steve's T/S 2068 and loaded it up with CHESS.

The game was on. Al and Bob acted as the human interface for the two machines. Bob put the T/S 2068 into Level 0 and Al put the QL into level 3. They had some start up problems but soon were in the 27th round of turns and things looked pretty even.

THEN IT HAPPENED! The lights went out, the machines winked out and then came back up with empty screens! The game was called on account of rain!

They vowed to try it again some time when the weather was better.

The talk then turned to an un-interruptible power supply project. We will have to see if the conversation was just hot air or if we really turn it into a club project. Bob Swoger said he has the circuit and P.C. boards.

The business meeting was called to order at 3PM. Nine members were present. The treasurers report was given (see the treasurers report) and membership record keeping was discussed.

Butch took the names of members that had Time Designs magazine due them in hopes that the members would get their magazines.

A motion was made to try to get past members back into the fold by making a special offer for 1990. A motion passed to send all issues of the 1989 newsletter to past members that re-up at this time as an

incentive to get them back on our mailing list.

Finally, do to some conflicting activities which happen on September 9th, the NEXT MEETING will be moved to SEPTEMBER 16. Please mark your calenders!

John Donaldson, Secretary
Chicago Area Timex Users Group

SYSOPs TWISTED PAIR

Nothing new has happened since the last reporting period with the new equipment acquired from AVL. I have had input from a few people that the BBS does confuse some users.

The BBS has been up since 1984 and was written by me at a time when I had never seen any other BBS. As a result it looks like no other board you've seen before. I wrote it from home on my T/S 2068 with MTERM II software. As a result it drives the screens of the computers calling in like none I have ever seen.

This Bulletin Board System is structured in a TREE fashion. Select 0 to back out of the BBS and 1 through 9 to head down the path you desire. CONTROL Z returns you to where you had just been. In the BROadcast mode, however, CONTROL Z will repeat the last message you sent.

Use Control S and Control Q to stop and start the computer sending to you. This is known as X-ON and X-OFF. Control O will let the computer run to the end of a file without showing anything on your screen. Use this when you get tired of reading a long article that keeps scrolling at you.

There is a group of boards that is a mini-manual to operate the

system if you select 4 on the MAIN board.

This group of boards is intended to allow self-teaching of this Digital Equipment Corp. PDP 11 mini- Computer using the RSX-11M operating system. These boards give only the bare minimum to let you get by, but should be just complete enough to let you do everything you'll need to do without the frills. < CONTROL Z > is the first most important thing to remember on this system, it almost always gets you out of trouble. The second most important thing to find on your machine is the RUBOUT key or sequence. This is key that will send ASCII 127, not ASCII 08(Control H) which is usually your delete key. On the T/S 2068 it is the left arrow key (SHIFT - 5).

I hope that this will get you started. Getting around in the BBS is just as easy as typing a number from 0 to 9 and please don't hang-up without logging out properly with a BYE or the system will crash.

BCNU L8R, ----GATOR----

FOR SALE THROUGH THE CLUB

Bob Swoger is the chairman for the following:

5.25" Disks DSDD.....	\$.50
5.25" Disks DSQD.....	\$ 1.00
3.5" Disks DSDD.....	\$ 1.00
3.5" Disks DSQD.....	\$ 4.00

50 Labels & 50 Sleeves for 5.25"	
Disks	\$ 0.50

Note: We have observed that lower price disks advertise that they are life-time guaranteed but what they do not say is that they will guarantee the life of your drive heads. Many of the disks are not polished, so be cautious!

B & B Computer Supplies of Elk Grove village carries:
%%%%%%%%%%%%%

Ribbons
Diskettes
Printer Paper by the case
9 1/2 X 11 15# 3500 Sheets
Fan-Fold Pin Feed\$30

Printer Paper by the case
9 1/2 X 11 20# 2700 Sheets
Fan-Fold Pin Feed\$28

Printer Paper by the box
9 1/2 X 11 15# 1000 Sheets
Fan-Fold Pin Feed\$10.95

Printer Paper by the box
9 1/2 X 11 20# 1000 Sheets
Fan-Fold Pin Feed\$13

Contact:
Joe Becker 312/860-2906

SPECIAL DEALS AND BUYS

CLUB POLICY REGARDING SPECIAL PURCHASES

Each special buy will have a CHAIRMAN who will coordinate ALL ACTIVITY regarding a purchase. The CHAIRMAN will publicize the special buy through the newsletter and at the CATUG meetings. All interaction will go through the CHAIRMAN and all checks will be sent to him, payable to the CHAIRMAN.

When the purchased goods arrive, the CHAIRMAN will see that they are distributed. All special buys must be PAID IN ADVANCE because the CATUG does not have enough funds to handle all of the buys without cash flow problems. So you MUST SEND A CHECK TO THE CHAIRMAN BEFORE THE DEADLINE or you will not be included in the special buy. The CHAIRMAN will contact the members on his interest list regarding deadlines and purchase price or alternately, it will appear in the NITE-TIMES newsletter.

Bob Swoger is the chairman for the following:
256K RAM-DISK KIT for T/S 2068
LarKen RAM-Disk Operating system board built and tested, 256K RAM-DISK board with connectors only, no IC's. The Disk Drive controller board can be added later to control up to 4 more double sided drives. Battery back-up, all system software.

**** \$88.00 postage paid. ***
Contact the chairman for more details. There is no Qty. buy necessary. Room 1230 X68068

ARTICLES

RETRIEVING LOST_DOCs

by Al Feng

It happens. More often with long files on microdrive, but it could happen on a floppy disk. You go back to reLOAD a file_doc for editing, and all you get is something like:

Loading ...
6789
ERROR - Press SPACE to continue

Or, your file_doc is no longer recognized as a "valid" QUILL file! So, you press the Space Bar, and try to figure out how to salvage the document without having to retype the entire file. After all, you know the file is still there because you can VIEW it by using a "COPY mdv2_file_doc to CON" Super BASIC command.

What's happened? Somehow the non-ASCII "trash" at the end of the program has become corrupted. Unfortunately, this is a very necessary part of the file. Don't despair. Recovery is simple enough if you don't panic (Note: this technique has

also been found to work on files which have caused a keyboard lock up upon pressing the SPACE BAR; so, it should work on almost any file).

1) Simply LOAD a short document (example, the 'BLANK doc' that you use for page formatting); then,

2) MERGE your recalcitrant file.

You should find the troublesome file appearing intact and on screen. Needless to say, you should now re-SAVE the file on a freshly formatted medium with an appropriate file name.

HAPPY TRAILS, and COMPUTING,
TO YOU. . .

MINIMUF 3.5

On which band and at what time should you expect propagation to Pakistan or Pennsylvania? Use this computer model of muf and prepare your own up-to-the minute predictions.

by
Bob Swoger, K9WVY

This program was originally published by Robert B. Rose, K6GKU in the December 1982 issue of QST and modified by me to give beam headings and number of skips.

MUF stands for maximum useable frequency. Enter your latitude and longitude, the latitude and longitude of the station you wish to work and the 10.7 cm solar flux number given by WWV at 18 minutes after the hour. You will then be given a 24 hour readout of the maximum useable frequency you can use to reach that point on earth.

Note that this program calculates the International Sunspot Number(R12) given in the articles graph so that you will not have to. It is

explained in the article that its better to use a number that is an average of the numbers given over a 5, 15 or 90 days running.

The accuracy is best between 250 and 6000 miles and 1 to 3 hops. It degrades rapidly under 250 miles. The measured accuracy is +/-3.5MHz.

Your finished screen should look like this:

	SOLAR FLUX 155					
TRANSMITTER LOCATION:						
LATITUDE	21	LONGITUDE	156			
RECEIVER LOCATION:						
LATITUDE	38	LONGITUDE	122			
SUNSPOT NUMBER	110					
52 DEGREES	2337 MILE	2 SKIPS				
UT LCL MUF (MHz)	UT LCL MUF (MHz)					
0	19	36.3	12	7	14.6	
1	20	35.0	13	8	14.1	
2	21	33.0	14	9	13.7	
3	22	29.9	15	10	21	
4	23	25.0	16	11	27.6	
5	0	22.8	17	12	31.5	
6	1	20.9	18	13	34	
7	2	19.3	19	14	35.6	
8	3	18.0	20	15	36.7	
9	4	16.9	21	16	37.3	
10	5	16.0	22	17	37.5	
11	6	15.2	23	18	37.1	

```

10 REM - MINIMUF 3.5 by Robert
B. Rose QST Dec 1982
      Sample Driver for MINIMUF 3
.5
100 CLEAR
110 DIM A$(4): DIM M(12)
120 DATA 31,28,31,30,31,30,31,3
1,30,31,30,31
130 FOR I=1 TO 12: READ M(I): N
EXT I
140 LET M$="JANFEBMARAPR MAY JUN J
UL AUG SEPOCT NOV DEC"
150 LET R0=PI/180: LET P1=2*PI
160 LET R1=100/PI
170 LET P0=PI/2
190 INPUT "TRANSMITTER LATITUDE
=?";L1
200 INPUT "TRANSMITTER LONGITUD
E=?";W1
210 IF L1>=-90 AND L1<=90 THEN

```

```

GO TO 240
220 PRINT "INVALID LATITUDE. MU
ST BE IN RANGE(-90,+90)."
230 GO TO 190
240 IF -360<=W1 AND W1<=360 THE
N GO TO 270
250 PRINT "INVALID LONGITUDE. M
UST BE IN RANGE(-360,+360)."
260 GO TO 190
270 INPUT "RECEIVER LATITUDE=?"
;L2
280 INPUT "RECEIVER LONGITUDE=?"
;"W2
290 IF L2>=-90 AND L2<=90 THEN
GO TO 320
300 PRINT "INVALID LATITUDE. MU
ST BE IN RANGE(-90,+90)."
310 GO TO 270
320 IF -360<=W2 AND W2<=360 THE
N GO TO 350
330 PRINT "INVALID LONGITUDE. M
UST BE IN RANGE(-360,+360)."
340 GO TO 270
350 INPUT "DAY";D6
360 INPUT "MONTH";M0
370 IF 1<=M0 AND M0<=12 THEN GO
TO 400
380 PRINT "INVALID MONTH. MUST
BE IN RANGE(1,12)."
390 GO TO 350
400 IF 1<=D6 AND D6<=M(M0) THEN
GO TO 440
420 PRINT "INVALID DAY. MUST BE
IN RANGE(1,";M(M0);")."
430 GO TO 350
440 INPUT "SOLAR FLUX NUMBER =
";SF
444 LET SF=(SF*(SF>=65))+(65*(S
F<65))
445 LET S9=(SF>65)*(INT ((625*((
SQR
((.73)^2-.0032*(65-SF))- .73))+.5
))
450 IF S9>=0 THEN GO TO 480
460 PRINT "INVALID SUNSPOT NUMB
ER. MUST BE NON-NEGATIVE."
470 GO TO 440
490 LET A$=M$(3*M0-2 TO 3*M0)
500 PRINT AT 0,0;"DATE: ";D6;AT
0,9;A$;AT 0,16;"SOLAR FLUX
";SF
510 PRINT "TRANSMITTER LOCATION
:"
520 PRINT " LATITUDE ";L1;AT 2,
16;"LONGITUDE ";W1
540 PRINT "RECEIVER LOCATION:"
550 PRINT " LATITUDE ";L2;AT 4,
16;"LONGITUDE ";W2

```

```

560 PRINT "SUNSPOT NUMBER ";S9
570 PRINT
580 PRINT "UT LCL MUF(MHz) UT
LCL MUF(MHz)"
590 PRINT OVER 1;AT 7,0;""
600 LET L1=L1*R0: LET W1=W1*R0:
LET L2=L2*R0: LET W2=W2*R0
610 GO SUB 2000
620 PRINT AT 6,1;HD;" DEGREES
";DM;" MILE ";NH;" SKIPS"
650 FOR I=0 TO 23
660 LET T5=I: GO SUB 1000
670 PRINT AT T5+(9*(T5<12))-(3*
(T5>11)),0+((T5>11)*17);T5;AT
T5+(9*(T5<12))-(3*(T5>11)),4+((T
5>11)*17);(24*((T5-6+(11>M0 AND
M0>4))<0))+T5-6+(11>M0 AND M0>4)
;AT
T5+(9*(T5<12))-(3*(T5>11)),9+((T
5>11)*17);J9
680 NEXT I
690 INPUT " PRESS ENTER FOR NE
XT CASE "; LINE A$
700 CLS : GO TO 180
1000 REM -MINIMUF 3.5
1010 LET K7=SIN (L1)*SIN (L2)+CO
S (L1)*COS (L2)*COS (W2-W1)
1020 IF K7>=-1 THEN GO TO 1050
1030 LET K7=-1
1040 GO TO 1070
1050 IF K7<=1 THEN GO TO 1070
1060 LET K7=1
1070 LET G1=ACS (K7)
1080 LET K6=1.59*G1
1090 IF K6>=1 THEN GO TO 1110
1100 LET K6=1
1110 LET K5=1/K6
1120 LET J9=100
1130 FOR J=1/(2*K6) TO 1-1/(2*K6
) STEP .9999-1/K6
1131 LET K1=J
1140 IF K5=1 THEN GO TO 1160
1150 LET K5=.5
1160 LET P=SIN (L2)
1170 LET Q=COS L2
1180 LET A=(SIN (L1)-P*COS (G1))
/(Q*SIN (G1))
1190 LET B=G1*K1
1200 LET C=P*COS (B)+Q*SIN (B)*A
1210 LET D=(COS (B)-C*P)/(Q*SQR
(1-(C*C)))
1220 IF D>=-1 THEN GO TO 1250
1230 LET D=-1
1240 GO TO 1270
1250 IF D<=1 THEN GO TO 1270
1260 LET D=1
1270 LET D=ACS D
1280 LET W0=W2+SGN (SIN (W1-W2))
*D
1290 IF W0>=0 THEN GO TO 1310
1300 LET W0=W0+P1
1310 IF W0<P1 THEN GO TO 1330
1320 LET W0=W0-P1
1330 IF C>=-1 THEN GO TO 1360
1340 LET C=-1
1350 GO TO 1380
1360 IF C<=1 THEN GO TO 1380
1370 LET C=1
1380 LET L0=P0-ACS C
1390 LET Y1=.0172*(10+(M0-1)*30.
4+D6)
1400 LET Y2=.409*COS (Y1)
1410 LET K8=3.82*W0+12+.13*(SIN
(Y1)+1.2*SIN (2*Y1))
1420 LET K8=K8-12*(1+SGN (K8-24)
)*SGN (ABS (K8-24))
1430 IF COS (L0+Y2)>-.26 THEN GO
TO 1520
1440 LET K9=0
1450 LET G0=0
1460 LET M9=2.5*G1*K5
1470 IF M9<=P0 THEN GO TO 1490
1480 LET M9=P0
1490 LET M9=SIN M9
1500 LET M9=1+2.5*M9*SQR (M9)
1510 GO TO 1770
1520 LET k9=(-.26+SIN (Y2)*SIN (
L0))/(COS (Y2)*COS (L0)+1E-3)
1530 LET K9=12-ATN (K9/SQR (ABS
(1-K9*K9)))*7.639437
1540 LET T=K8-K9/2+12*(1-SGN (K8
-K9/2))*SGN (ABS (K8-K9/2))
1550 LET T4=K8+K9/2-12*(1+SGN (K
8+K9/2-24))*SGN (ABS
(K8+K9/2-24))
1560 LET C0=ABS (COS (L0+Y2))
1570 LET T9=9.7*C0^9.6
1580 IF T9>.1 THEN GO TO 1600
1590 LET T9=.1
1600 LET M9=2.5*G1*K5
1610 IF M9<=P0 THEN GO TO 1630
1620 LET M9=P0
1630 LET M9=SIN M9
1640 LET M9=1+2.5*M9*SQR M9
1650 IF T4<T THEN GO TO 1680
1660 IF (T5-T)*(T4-T5)>0 THEN GO
TO 1690
1670 GO TO 1820
1680 IF (T5-T4)*(T-T5)>0 THEN GO
TO 1820
1681 IF (T5-T4)*(T-T5)>0 THEN GO
TO 1820
1690 LET T6=T5+12*(1+SGN (T-T5))
*SGN (ABS (T-T5))
1700 LET G9=PI*(T6-T)/K9

```

```

1710 LET G8=PI*T9/K9
1720 LET U=(T-T6)/T9
1730 LET G0=C0*(SIN (G9)+G8*(EXP (U)-COS (G9)))/(1+G8*G8)
1740 LET G7=C0*(G8*(EXP (-K9/T9)+1))*EXP ((K9-24)/2)/(1+G8*G8)
1750 IF G0>=G7 THEN GO TO 1770
1760 LET G0=G7
1770 LET G2=(1+S9/250)*M9*SQR (6+58*SQR (G0))
1780 LET G2=G2*(1-.1*EXP ((K9-24)/3))
1790 LET G2=G2*(1+(1-SGN (L1)*SGN (L2)).1)
1800 LET G2=G2*(1-.1*(1+SGN (ABS (SIN (L0))-COS (L0))))
1810 GO TO 1880
1820 LET T6=T5+12*(1+SGN (T4-T5))
    )*SGN (ABS (T4-T5))
1825 REM PRINT G0,G7
1830 LET G8=PI*T9/K9
1840 LET U=(T4-T6)/2
1850 LET U1=-K9/T9
1860 LET G0=C0*(G8*(EXP (U1)+1))
    *EXP (U)/(1+G8*G8)
1870 GO TO 1770
1880 IF G2>J9 THEN GO TO 1900
1890 LET J9=G2
1900 LET J9=(INT ((J9*10)+.5))/1
0
1910 NEXT J
1920 RETURN
2000 REM DX PRGRM
2010 LET AL=COS L1*COS L2*COS (A
    BS (W1-W2))+COS (ABS
    (L1-L2))-COS L1*COS L2
2020 LET AL=ATN (SQR (1-(AL*AL))
    /AL)
2030 IF SGN AL=-1 THEN LET AL=PI
    +AL
2040 LET DM=INT (AL*3956.834+.5)
    : LET DK=INT (DM*1.6093+.5)
2050 LET HD=(SIN (L2)-SIN (L1)*C
    OS (AL))/(SIN AL*COS L1): LET
    HD=ATN (SQR (1-HD*HD)/HD)
2060 IF SGN HD>=0 AND SGN (SIN (
    W1-W2))>=0 THEN GO TO 2100
2070 IF SGN HD<0 AND SGN (SIN (W
    1-W2))>=0 THEN LET HD=PI+HD: GO
    TO 2100
2080 IF SGN HD<0 AND SGN (SIN (W
    1-W2))<0 THEN LET HD=PI-HD: GO
    TO 2100
2090 LET HD=P1-HD
2100 LET HD=INT (HD*57.296+.5)
2110 LET NH=INT ((AL*5/PI)+1)
2120 RETURN
9991 CLEAR

```

```

9992 PRINT #4: SAVE "MNIMUF.B1"
LINE 10
9998 PRINT #4: LOAD "L.B1"
@191WRITTEN BY BOB SWOGER-K9WVY
1984

```

This program can be downloaded from the CATUG BBS using MTERM II on your Westridge 2050. Use the data parameters 8-N-1 Full-DUPLEX, buffer conversion HEX and the buffer closed and empty. Call 312/576-7072 and after connecting hit <ENTER> until you get the '>' prompt. Then type: LOG SINCLAIR/GUEST

Go to the BBS download section and download MNIMUF.B1 in the HEX mode. Remember that you are a guest on this board so please act accordingly.

UPCOMING AREA HAMFESTS

Since HAMFESTS are a good source of computer equipment we will try to keep you all informed of them as we find out about them. I know someone who picked up 2 T/S 2068 and some software for \$50 total! See you all there...

September 16 & 17:
SUPERFEST 89
Exposition Gardens,
West Northmoor Road,
Peoria, Illinois

October 15:
KETTLE MORaine RADIO AMATEURS,
INC.,
Waukesha County Exposition
Center Forum,
Highways J and FT,
Waukesha, Wisconsin

October 29:
LATE FALL HAMFEST,
Lake County Fairgrounds,
Grayslake, Illinois

CLASIFIED ADS

To put an AD in the Computer related section of the BBS, put a file in your account with the filename.filetype: COMPUTER.ADS

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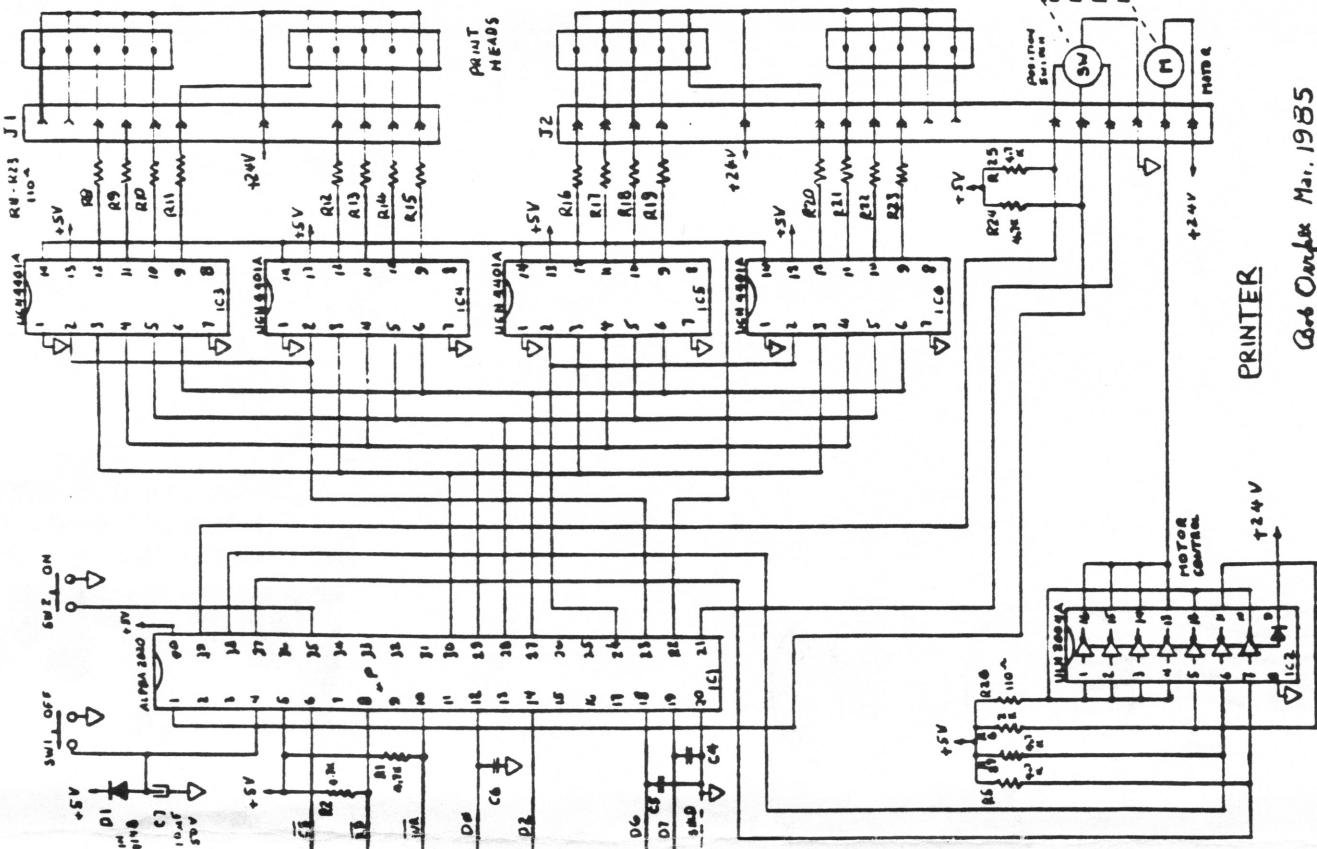
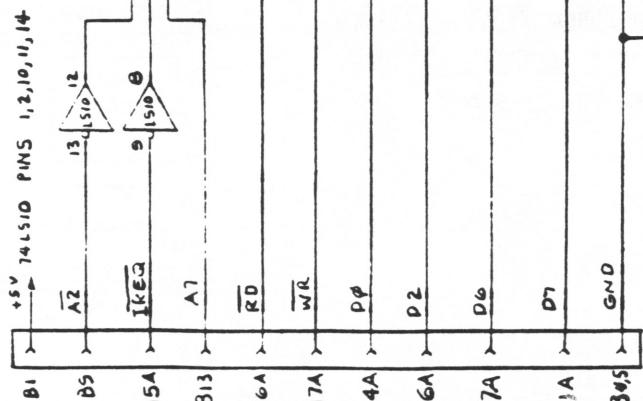
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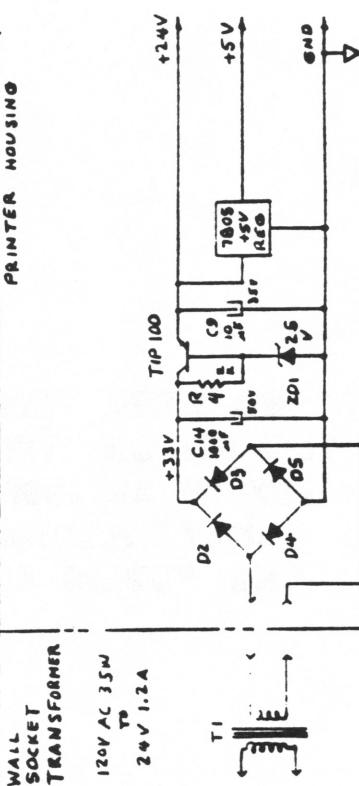


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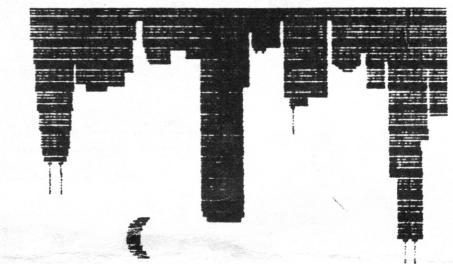
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